



Critical Connections Program for Migratory Birds in Alaska

2015 Program Activities

Natural Resource Report NPS/DENA/NRR—2015/1087





ON THIS PAGE

The field team takes measurements of a Swainson's thrush in Denali National Park and Preserve.
Photograph courtesy of the National Park Service

ON THE COVER

Photograph of a gray-cheeked thrush fitted with a light-level geolocator.
Photograph courtesy of G. Gress

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Photo 1. The sun rises early in July in Denali National Park and Preserve. Photo by G. Gress

Abstract

Although Alaska's National Parklands encompass 54 million acres of wildlife habitats, animals are not constrained by jurisdictional lines and many move seasonally across land and water through a patchwork of protected and unprotected lands. The Critical Connections Program was initiated to provide essential information for conserving migratory species by linking research results directly to conservation and education effort.

At this stage, the primary program objectives are to:

1. Develop a thorough understanding of the year-round movements of Alaska's migratory birds.
2. Use data collected on the breeding grounds, migration routes, and wintering areas to identify factors constraining survival and driving trends of Alaska's migratory birds.
3. Expand collaborative efforts to mitigate constraining factors and protect critical resources necessary to conserve Alaska's migratory birds.

We initiated the Critical Connections Program in 2014-2015 by deploying light-level geolocators on 12 gray-cheeked and 19 Swainson's thrushes. In summer 2016, we plan to locate and recapture tagged thrushes and to deploy geolocators on additional species including Arctic warblers and Wilson's warblers.



Photo 2. A post-release Swainson's thrush fitted with a geocator and color bands. NPS photo.

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Introduction

Although Alaska's National Parklands encompass 54 million acres of wildlife habitats, animals are not constrained by jurisdictional lines and many move seasonally across land and water through a patchwork of protected and unprotected lands. National Park Service (NPS) managers cannot meet their mission to conserve wildlife within parks without understanding the basic aspects of a species' life history including movements outside park boundaries. The Critical Connections Program was initiated to provide essential information for conserving migratory species by linking research results directly to management and conservation actions and expanding and enhancing partnerships and public education.

Alaska's National Parklands provide critical nesting habitat for a greater abundance and diversity of long-distance migratory birds than nearly all the other NPS areas in the United States. Many migratory birds travel extraordinary distances and encounter a wide range of risks to survival and reproduction throughout their lifetime. Many recent studies documented declining breeding populations of long-distance migratory birds (Both et al. 2006, Sanderson et al. 2006, Hewson and Noble 2009, Heldbjerg and Fox 2008, Faaborg et al. 2010, Ockendon et al. 2012, Reif 2013). Even in Alaska, significant declines were documented in the reproductive success of golden eagles (*Aquila chrysaetos*, McIntyre and Schmidt 2012) and the abundance of Wilson's warblers (*Cardillina pusilla*, Schmidt et al. 2013). The causes of these recent declines are likely to be found either along their migration routes or on their wintering grounds. Recent evidence indicates that, in particular, mortality during migration may be a major demographic factor affecting population dynamics (Newton 2008, Faaborg et al. 2010).

The miniaturization of tracking devices launched a new era of bird migration research and conservation efforts. The use of lightweight tracking units is changing some of the major assumptions about bird movements (McKinnon et al. 2013). In Denali National Park and Preserve (Denali), recent tracking studies of golden eagles has revealed more information about their movements than over 10 years of banding (McIntyre et al. 2008). In the rapidly changing Arctic, satellite telemetry studies provided new information about nonbreeding areas of declining eider species (*Somateria* spp., Petersen et al. 1999, Phillips et al. 2006), the trans-hemispheric movements of gyrfalcons (*Falco rusticolus*, McIntyre et al. 2009), and the remarkable non-stop journeys of bar-tailed godwits (Gill et al. 2005).

Currently, tiny light-logging geolocators are rapidly expanding the taxonomic scope of our understanding of bird movements (McKinnon et al. 2013, Weidensaul 2012). A recent study using geolocators to track common swifts (*Apus apus*) amassed more information about their migration and non-breeding sites than 100 years of banding (Akesson et al. 2012). And, tracking studies of Arctic terns (*Sterna paradisaea*) and Sabine's gulls (*Xema sabini*) from Greenland revealed the longest animal migration known in the world (Egevang et al. 2010) and previously unknown important stopover areas (Stenhouse et al. 2012).

The Critical Connections Program is using this rapidly evolving technology to provide new information on the year-round movements of Alaska's migratory birds, to link that information with

ongoing bird monitoring programs, and then use the results to enhance park management, build effective partnerships, develop collaborative conservation efforts, and increase the effectiveness and relevancy of public education.

The primary program objectives include:

1. Develop a thorough understanding of the year-round movements of Alaska's migratory birds.
2. Use data collected on the breeding grounds, migration routes, and wintering areas to identify factors constraining survival and driving trends of Alaska's migratory birds.
3. Expand collaborative efforts to mitigate constraining factors and protect critical resources necessary to conserve Alaska's migratory birds.

We initiated the Critical Connections Program in 2014-2015 by obtaining a small fellowship to conduct a pilot study in Denali. We selected our initial study species based on body size, conservation status, and relative abundance in our study area. We chose to begin our study with two thrush species, Swainson's (*Catharus ustulatus*) and gray-cheeked thrush (*Catharus minimus*), because they are common breeders in on the north side of the Alaska Range in Denali; results will tie into and amplify work being done farther south with Swainson's thrushes (Delmore et al. 2012, Comier et al. 2013); the species are of conservation concern in at least parts of their range (Mack and Yong 2000, Lowther et al. 2001); and there is evidence that their distributions are changing in relation to large scale changes in vegetation in Denali (McIntyre, unpublished data). This report details field activities completed for this study in 2015.

Methods and Results

Field work was conducted 3-8 July 2015 by our team including NPS and cooperating researchers. We trapped gray-cheeked and Swainson's thrushes in foot-accessible locations along the Denali Park Road (Figure 1). We captured individual birds on their breeding territories using mist nets, decoys, and playbacks of species specific songs and alarm calls (Photo 3). We successfully captured Swainson's thrushes in about 23 minutes ($n = 13$, range 1-52 minutes) on average after we began the



Photo 3. A Swainson's thrush decoy was placed in front of a mist net to capture territorial Swainson's thrushes. Photo by G. Gress

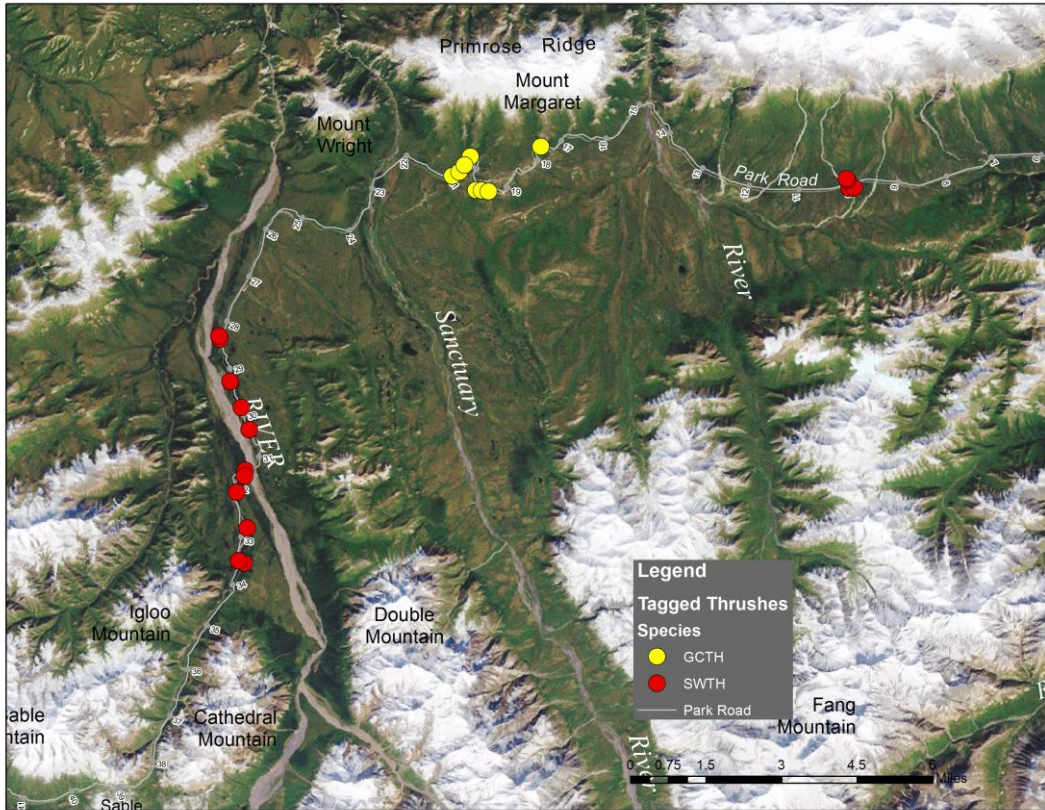


Figure 1. Location of gray-cheeked (GCTH) and Swainson's thrushes (SWTH) captured in Denali National Park and Preserve in 2015.

playback. Generally, we were able to successfully trap a male Swainson's thrush using a single 12 m mist net with decoy and song playback if it was detected in the area during a capture attempt. Successful capture attempts for gray-cheeked thrushes took 57 minutes ($n = 9$, range 20-88 minutes) on average. We found gray-cheeked thrushes more challenging to capture and modified our net sets until we found a set up that proved fairly successful. Multiple mist nets (2-3 12m or 6m nets) set in



Photo 4. Light-level geolocator with leg-loop harness attached. Photo by S. Weidensaul

an array around the decoy and song playback as close to vegetation as possible proved most successful. We also found that moving observers at least 20m from the nets and checking them every 15 minutes seemed to improve capture rate for gray-cheeked thrush.

We attached a geolocator to each captured thrush using a leg-loop harness design (Rappole and Tipton 1991, Streby et al. 2015). We created 25mm harness loops from 0.5mm black stretch jewelry cord as described in Streby et al. 2015 (Photo 4).



Photo 5. Swainson's thrush with geolocator attached. NPS photo



Photo 6. Gray-cheeked thrush with geolocator attached. NPS photo

We deployed ML6790 geolocators manufactured by BioTrack (Wareham, UK) on 12 gray-cheeked and 19 Swainson's thrushes (Photo 5-6). Each bird was banded with two plastic color bands in addition to US Geological Survey aluminum bands. Color bands will allow researchers to identify tagged thrushes and target specific individuals for recapture in summer 2016.

Future Plans

In summer 2016, we plan to locate and recapture tagged thrushes. Geolocators will be removed from the birds and data will be downloaded and analyzed. We will use the tracking data to identify migration routes, stopover areas, and wintering grounds, describe migratory behavior, and start to assess how environmental conditions in these areas relate to survival and reproductive success.

We plan to deploy geolocators on additional species in 2016. Currently, we plan to capture and attach geolocators to Arctic warblers (*Phylloscopus borealis*) and Wilson's warblers along the Park Road in Denali.

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